

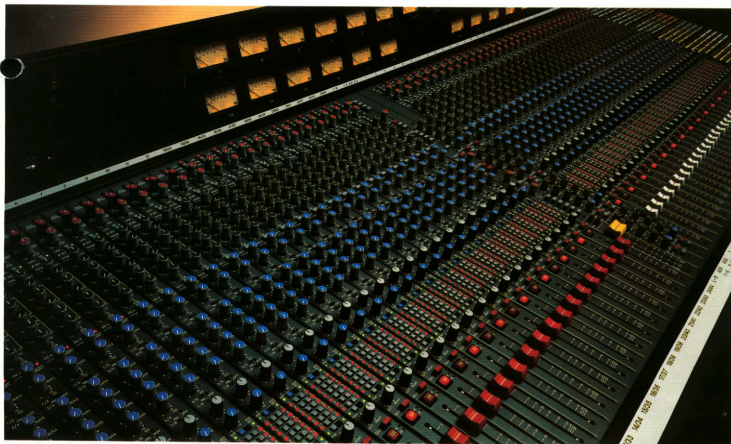
DDA

DMR 12

24 Track Recording/Mixdown Console

The ways in which we Record and Mix music have changed dramatically since the first generation consoles. The use of multi-voice synthesisers and sequencers is now a daily occurrence in studios, and many contemporary consoles compromise the creative performance.

That is, until the DMR 12



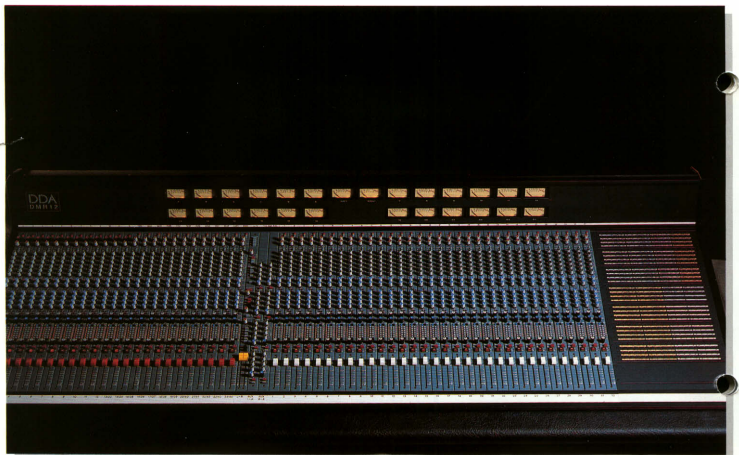
The DMR12 has been designed not simply as a requirement for a new console, but finally to provide Studios and Engineers with a console that operates in the way today's recording techniques require.

The new console is ideally suited for small 24-track studios, and the Professional Domestic recording facility owned by Musicians and Producers. It will perform admirably with tape machines such as the 'budget' 24 Track machines from Studer, Otari, and Tascam, and is a perfect partner to the AKAI DR1200 Digital Multitrack system.

As new generations of machine appear, the DMR12 is ready to meet them.

When designing the DMR12, we started by examining the limitations of the traditional Split and Inline console designs, and discussing the needs of Studios and evaluating the way productions evolve.

As always, the famous DDA sound quality was to be upheld, along with the other factors such as ease of use, and true product value, coupled with the required attributes of large input capacity and compact size.



DMR12 custom layout configured with all monitoring on left-hand side

The Multiple Input Concept

Imagine that the console is simply all input modules. Each module has an input, EQ section and routing to the buses, along with auxiliaries.

Now lay out the console in the traditional way with inputs to the left and groups/monitors to the right. The 24 right hand modules are dedicated to the group output and monitor return functions, and 12 of these contain the bus summing amplifiers and bus trim controls. All of these modules contain routing facilities, to allow re-routing of their input signals.

The remainder of the modules are able to be freely assigned and dedicated to microphones, and multivoice synthesisers such as Synclavier and Fairlight systems, if required. These modules have two line inputs in addition to the Mic input, so a

second Multitrack may be selected as an input, without re-patching over the normal line inputs. There is also a second use for these dual line inputs which is detailed later, but provides a method of gaining effects returns to the stereo mix.

In many ways, it is an evolution of the split design, but with the added advantage of being able to route signal inputs on the Group section to other buses, being an exceptionally easy way of forming audio sub groups without re-patching, either to tape for track bouncing, or to the stereo mix, much like the Inline style of console.

The use of identical signal paths and equalisers means that these dedicated channels always provide the same EQ whether in recording or mixdown.

The Tapeless Studio

Of course, the DMR12 is also ideally suited to those studios working 'tapeless', ie without a multitrack recorder. A large number of studios and musicians are now working in a 'programming suite', where the composition of music is achieved on Synclavier, Fairlight or similar systems, without ever recording those signals on traditional tape media. Here, obviously, a clean signal path is a must, and the DMR12 performs superbly.

In this instance, the DMR12 provides very high input capacity using the tape returns as line inputs, as well as the effects return inputs, and the routing matrix and bus outputs can be utilised to provide another set of effects sends.

The high Input to Size ratio contributes to the DMR's suitability for this area, where space is usually at a premium.

Console Sizes and Layout

There are two frame sizes of the DMR12. Module width is 19 inches, permitting a high input/size ratio. The largest frame size of 89 inches (2.26 metres) can be filled with up to 56 input/output modules. This configures as 44 Input modules and 12 Outputs, with the Stereo master and Auxiliary master modules. This model equates to a 32/12/24 style of console when recording, or 56/12/2 when mixing. However it is capable of being effectively more.

A smaller frame (77 inches, 1.95 metres) accommodates 44 Input/Output modules with space for two effects returns or

The Mobile

Size is also important in Mobile recording and Outside Broadcast Vans. The DMR12 is again ideally suited to this application. If more than 12 tracks are required, the controlled direct outputs from the channels may be utilised as tape sends for dedicated single channel tracks.

TV Production

In the layback situation in TV Production, multitrack tapes are gradually built-up from sound effect and dialogue sources, with simultaneous monitoring of the multitrack. Finally, the tracks are mixed and laid back onto two spare tape tracks. The format of the DMR12 is perfect for this application.

stereo inputs. This would be a 20/12/24.

Metering is by moving coil VU meters as standard, but BBC PPMs or LED Bargraph meters are available as cost options.

The normal layout of the desk would be 20 or 32 inputs to the left, masters, 12 outputs, and then 12 more inputs, the latter being the monitor returns for tracks 13-24.

Custom layouts, differing from those given above, may be accommodated easily thanks to the construction of the frame and the method of module connection to the patchbay.

Frame Construction

The DMR12 is constructed around a set of proven aluminium extrusions and an aluminium honeycomb base panel, making a highly rigid yet light shell to house the modules and patchbay.

The optional floorstand incorporates cable ducts to prevent unsightly cable runs, and covered cable trays are an integral part of the rear of the chassis.

The mic inputs, on XLR type connectors, are assembled on multiway panels, while all other signals such as line inputs and multitrack sends and returns are on EDAC type multiway connectors mounted directly onto the patchbay unit.



Automation

Two types of automation are catered for within the DMR12.

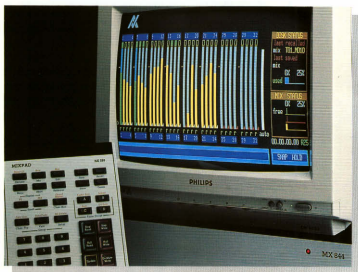
Midi Muting

The DDA Midi Mute system can be fitted easily to the DMR12, providing in addition to 128 mute patches and midi channel selection, a solo-in-place function and 9 mute group settings. Control of this system is very simple.

VCA Fader & Mute

As the mute circuitry is accessible independently of the fader audio signal, the latest generation of proprietary console automation systems such as the Audio Kinetics Reflex, Optifile or Steinberg Mimix systems system may be fitted easily, providing fader and independent mute automation.

Details on these systems are available from DDA.



Input Module

Inputs to this module are Mic, with phantom power and pad switches, or line, with switch selection of two line inputs.

Access to the mic inputs is by XLR, and to the line inputs via the patchbay and/or EDAC multiways.

Separate gain controls are provided for both Mic and Line level, feeding the signal through a phase reverse circuit and high pass filter ($\pm 12\text{dB}$ per octave below 70Hz) to the four band equaliser.

The EQ section comprises HF ($\pm 15\text{dB}$ at 12 kHz, shelving), two mid sweep sections ($\pm 15\text{dB}$ at sweep frequencies of 500Hz to 16kHz and 75Hz to 2.4kHz, with a Q of 1.5), and an LF control ($\pm 15\text{dB}$ at 70Hz).

Eight auxiliary buses are fed by independent rotary controls, with pre/off/stop switching in pairs. Auxes 7 and 8 are arranged as a level and pan pair.

The routing is very cleverly designed. DIR changes the function of Aux 6 control to provide a controlled direct output from the channel, and follows the selection of pre, off or post as before, enabling its use as a channel-dedicated effects send.

The switch labelled AUX RET alters the function of Aux controls 7 & 8 to access the non-selected line input, and routes it direct to the stereo mix. This feature can be used to double the number of line inputs available on mixdown, or to provide a dedicated mono effects return with level and pan, or even as a sub-group master control, leaving the main fader free for tape monitoring.

Bus routing is by 12 individual switches to buses 1-12, access to tracks 13-24 is possible on the output module.

A Mix Pan control, solo button, signal present and peak led's complete the module.

As noted earlier, twelve of these input type modules are dedicated to monitor buses and tracks 13 to 24, so that at all times, the 24 track monitoring takes place on 24 lead-throw faders. Even in the MIX situation, there is now no need to re-configure the console to bring the tape returns up on normal inputs, as both full EQ and routing are provided on the 'monitor' section.

Output Module

This module is identical to the Input module with the following exceptions:

Inputs: This module accesses the BUS and TAPE (line) signals.

If TAPE is selected, the BUS is available for pick-up by the Aux 7 & 8 controls when AUX RET is selected on the routing matrix, feeding it to the stereo mix. This allows easy sub-group formation while in normal tape monitor mode.

Alternatively, if BUS is selected, the TAPE signal can be used as an effects return or mix input. The BUS signal, if used as a sub-group, can have access to the EQ and auxiliaries, and routed to mix or other tracks for track bouncing.

The BUS TRIM control provides adjustment of the overall summed bus signals to be sent to tape. The BUS 1/BUS 13 switch routes bus 1 to track 1 or 13 on the tape machine via the patchbay (similarly for BUS 2/12 etc).

The equaliser section is the same as that on the input modules, so all signals, whether in record or mix, have identical signal processing facilities and routing flexibility.

Stereo Master Module

The Stereo Master Module contains all the main stereo output and monitoring controls, as well as the internal test oscillator and talkback system and routing.

Level controls for Studio and Control room speakers are provided, with alternate control room speaker switching. The source for monitoring can be selected from the two stereo tape returns, the stereo mix output, or another external stereo source.

Each pair of Control Room monitor speakers has a parallel wired XLR in addition to the EDAC connector, providing quick installation of 'trial' systems without the need to access the multiway wiring. The talkback microphone is fitted in the meter bridge.

Auxiliary Master Module

Two Auxiliary Master Modules provide controls for the Auxiliary buses 1 to 8. Each module contains four master output sections, each with level control, solo and cut switches, and fed to the output through a three band equaliser circuit, which has a sweep mid range of 500Hz to 16kHz, and fixed HF and LF controls at 12kHz and 70Hz.

Having this equaliser section is useful for adjusting the EQ on headphone and effect sends, and also in live situations for loudspeaker feeds, removing the need for simple external equalisation.

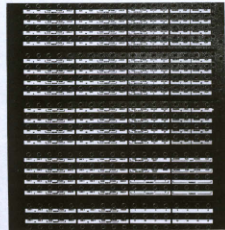
Patchbay

The integral patchbay is constructed around Mosses & Mitchell long frame metal TT bantam jacks, which are highly reliable, and permit easy servicing. These jacks are carefully pc mounted, which also allows rapid maintenance.

The whole patchbay is assembled as one unit, with modules of four rows of jacks fitting into a steel shell. All the multiway connectors are fitted to this shell, and access to the underside of the patchbay for servicing is by a hinged cover.

In addition to the normal line inputs, outputs and multitrack patching facilities, up to 96 tie lines are included as standard within the patchbay, as well as two sets of four way parallels.

Modules are connected to the patchbay via computer style motherlooms, providing a convenient way of re-arranging console layout to custom designs.



Operational Modes

Recording

In normal recording mode, the input is selected from Mic or Line, and routed through the module routing matrix. Here it can be assigned to any of the twelve buses (1-12). If it is desired to send a signal (or combination of signals) to track 15, for example, the signals are routed to BUS 3 on the inputs, and the BUS 3/BUS 15 switch depressed on the output module. This method of routing is in many ways more flexible than systems where the 'shift' function is a part of the routing matrix on the input module, where only tracks 1-12 or 13-24 could be accessed. With the DMR 12, an input may be assigned to track 1, 4, 20 and 23 if desired (and any combination, as long as the chosen tracks are not mutually exclusive, e.g. tracks 2 and 14).

The overall level to tape is governed by the BUS TRIM control on the respective output module, and monitored on the meters and main monitoring system by selecting BUS or TAPE as the input to the monitor return section of the output module.

It is possible to monitor both the BUS Output and the Tape Return, by pressing AUX RET on the routing switches. Here, the Tape return will be fed through the Aux 7/8 control directly to the stereo mix. This mode also allows overdubbing to be easily controlled, as there are individual level controls for each of the BUS and TAPE signals.

Mixdown

In Mixdown mode, the normal position of the TAPE return signal will be on the 12 output modules and the 12 input modules to their immediate right. TAPE is selected on the outputs, and LINE on the inputs. The inputs are sent to the stereo mix using MIX on the routing section.

Effects sends are accessible on Aux buses 1-8 of course, but the DIR switch allows an individual channel to feed its signal out of the module directly to an effect (via patchbay). This means that it is possible to utilise up to 56 sub direct outputs, and still access the other 7 Auxiliary buses, more than enough Auxiliary combinations!

The remaining inputs can of course be used in mixdown, with selection of LINE 1 or LINE 2 and routing to MIX.

At all times, either during recording or mixing, the EQ section in the main signal path is identical on all modules.

There are additional line inputs available for use as effects returns or tape inputs (or synthesiser, hard disc systems, etc.).

On each input module, the non-selected line input may be routed directly to the stereo bus by pressing AUX RET on the routing section. This frees normal channel modules from being used up as effects returns, and doubles the input capacity of the console.

On the output module, if TAPE is selected then the BUS input is available through Aux 7/8 when AUX RET is selected. This input can be utilised to provide sub-grouping (see below) or by cross-patching any other line input from the tie-lines.

Sub-Group Formation

Sub groups may be easily formed for many uses:

Track bouncing

Select tracks you wish to mix to another track, and select TAPE as the input to those modules. Route them on the matrix to the desired bus, and use the BUS TRIM to adjust their overall level.

Audio Sub-group mix — method 1

Use the method as described for track bouncing, and select the MIX switch to send the summed signal to mix. The overall level of the sub-group is controlled by the long fader, when BUS is selected as the channel input.

Audio Sub-group mix — method 2

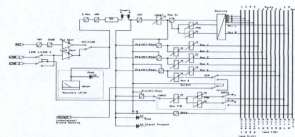
Select the desired sub-group channels, and route them to another unused bus. Now switch the module input to TAPE, and the Aux 7/8 to AUX RET and use these controls to feed the summed signal to the stereo mix.

Overdubbing

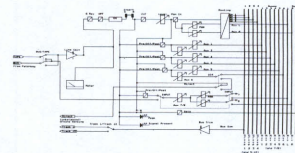
It is possible using the AUX RET facility to provide simple methods of overdub monitoring while in recording mode.

If your tape signal is monitored using the TAPE/BUS switch selected to BUS so that the signal to be recorded is going through the channel, AUX RET will bring the monitor back to the mix through the Aux 7/8 controls.

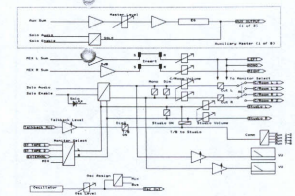
Alternatively, 'dry' signals sent to the bus can be monitored using AUX RET, while the tape return is monitored by switching the module input to TAPE.



Input Module Block Diagram



Output Module Block Diagram



Master Modules Block Diagram

Technical Specifications

Input Impedance
Microphone
Line
Gain
Microphone (Channel Input to Mix Input)
Line (Channel Input to Mix Input)
Frequency Response
Mic to Mix Gain = 20dB
Line to Mix Gain = 0dB

Noise (EIN Audio)
Microphone Gain = 55dB, EIN (ref. 200 Ohm)
Line to Mix Gain = 0dB, 18 inputs

Distortion
Microphone (-50dB input, +40dB output) <0.05%
Line (+40dB input, +40dB output) <0.05%

Output Impedance
All outputs (Electronically balanced) <750 Ohm

Cross-talk
Adjacent channel
Group to Mix
N.B. 0dB = 0.775 Volt

<120dB
<84dB

DDA reserves the right to alter the design and specification of its products without prior notice



DDA
A LARK-TEKNIK COMPANY

SOUND THINKING

Unit 1, Inwood Business Park,
Whitton Road, Hounslow,
Middlesex, TW3 2ER,
United Kingdom.

Telephone: (081-570 7161
Fax: (081-577 3677

Lark-Teknik Electronics Inc.,
200 Sen Lane,
Parsippany,
NJ 07054

Telephone: (516) 249-3600
Fax: (516) 420-1563

Lark-Teknik Singapore PTE,
75002 Beach Road,
#03/06/8 The Plaza,
Singapore, 0719

Telephone: 283 9736
Fax: 283 9738

- ▶ 56 Channels and patchbay in less than 89"/2.3 metres ◀
- ▶ Full independent 12 bus routing with switched access to 24 tracks ◀
- ▶ Full 24 Track Monitoring and Mix on Long throw faders ◀
- ▶ Multiple Input concept allows total flexibility in recording and mixdown ◀
- ▶ Up to 112 Line inputs available on Mixdown ◀
- ▶ Input modules feature Mic and **two** line inputs ◀
- ▶ 8 Auxiliary Buses, with controllable direct output facility ◀
- ▶ Aux 7/8 switchable to become Effects return to Stereo Mix ◀
- ▶ Capability to provide 56 Effects sends, 56 Line inputs and 56 Effects returns, and the Auxiliary buses simultaneously. ◀
- ▶ Output Modules feature BUS/TAPE selection and full routing ◀
- ▶ Identical 4 Band Equaliser on Input and Output Modules ◀
- ▶ Test Oscillator and Talkback Facilities on Master Module ◀
- ▶ Mosses & Mitchell metal bantam jack patchbay ◀
- ▶ Midi Mute Automation ◀
- ▶ Choice of VCA Fader Automation Systems ◀

